

REMARKS

Claims 11-38 are pending in this application. Claims 1-10 are canceled herein. Claims 11, 24, and 25 have been amended herein. In view of these amendments and remarks, Applicant respectfully requests reconsideration of the claims.

Claims 33-38 were allowed.

Claims 24 and 25 were rejected under 35 U.S.C. 112 for insufficient antecedent basis. However, the claims have been amended such that this rejection is now moot.

The remainder of the claims were rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes alone or in further view of Ko, *et al.*, Park, or Yu. However, independent claim 11 has been amended such that it now includes limitations that clearly are not, and cannot, be met by the Forbes reference or any of the other references of record. Specifically, the claims require that the germanium be implanted in the workpiece, so that the concentration gradually decreases as the distance from the top surface increases. This is opposite from the method disclosed in Forbes.

More specifically, the impurity gettering germanium-containing region of Forbes is below the crystalline silicon region where the electronic devices are formed. Further, the drawings of Forbes and the associated text in no way even suggests much less teaches that the crystalline silicon device regions include any germanium dopant whatsoever. In fact, the doping profile of FIGs. 4, 5, and 6 of Forbes clearly shows a peak in germanium concentration well below the top surface of the substrate, and also shows that the top most portion of the substrate next to the top surface is void of germanium. This is clearly opposite from the teachings of the present invention, (e.g., see FIGs. 3 and 7 and the associated text). Further, as clearly stated at paragraph 0033 of Forbes, "the relatively high dose *and energy* of the germanium ion

implant...results in a region of silicon that contains germanium ions...". Therefore, from the germanium containing gettering layers or regions below the crystalline silicon area where devices are formed, Forbes discloses using 170-200 KeV to implant or drive the germanium ions deep into the substrate, whereas the present invention teaches and claims using very low implanting energy between about 0.5-5.0 KeV to assure a high concentration of germanium proximate the top surface of the substrate. Thus, it is clear that Forbes does not disclose much less teach that the germanium is implanted so that the highest concentration of germanium is at the top surface of the workpiece, and so that the concentration gradually decreasing as the distance from the top surface increases. These limitations are included in the claims of this invention. Forbes teaches away from this concept by driving the germanium ions well past the top region of the substrate (where the devices are formed) so that the deeply implanted germanium containing region is below the active or device region and will act to getter or pull impurities from the adjacent (just above) active or device region.

Even if a few stray germanium ions of the Forbes method are not driven past the active or device region at the top portion of the substrate, the peak concentration of the germanium ions is still well below the top surface, and therefore clearly does not anticipate or make obvious the independent claims of the present invention. Further, none of the other references of record overcome the shortcomings of the Forbes reference, and therefore, it is submitted that rejected independent claim 11 is allowable. The rejected dependent claims are likewise allowable for depending from a claim deemed allowable as well as for their own limitations.

In view of the above, Applicant respectfully submits that the application is in condition for allowance and requests that the Examiner pass the case to issuance. If the Examiner should have any questions, Applicant requests that the Examiner contact Applicant's attorney at 972-732-1001 so that such issues may be resolved as expeditiously as possible. No fee is believed due in connection with this filing. However, should one be deemed due, the Commissioner is hereby authorized to charge the appropriate fees to Deposit Account No. 50-1065.

Respectfully submitted,

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